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REMARKS

Entry of this Amendment is proper because it does not raise any new issues requiring further search by the Examiner, narrows the issues on appeal, and is believed to place the present application in condition for immediate allowance.

Claims 1-5, 8-20, 27, 28, 31, and 32 are all the claims presently pending in the application.

Applicants gratefully acknowledge that claims 3, 9, and 10 would be allowable if rewritten in independent form. While Applicants believe that all of the pending claims are patentable, to speed prosecution, allowable claims 3 and 9 have been rewritten in independent form. Thus, allowable claims 3, 9, and 10 should now be allowed.

However, for the reasons set forth below, Applicants respectfully submit that all of the claims (i.e., claims 1-5, 8-20, 27, 28, 31, and 32) are allowable.

While Applicants believe that claims 6, 7, 21-26, 29, and 30 are patentable, to speed prosecution, Applicants cancel claims 6, 7, 21-26, 29, and 30 without prejudice or disclaimer to the filing of a divisional application directed to the subject matter of these claims.

New claims 31 and 32 are added to provide more varied protection for the present invention.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicants specifically state that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

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With respect to the prior art rejections, claims 1, 2, 4-7, and 11-26 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Muramatsu (U.S. Patent No. 6,695,658). Claim 8 stands rejected under 35 U.S.C. § 103(a) as being obvious over Muramatsu. Claims 27-30 stand rejected under 35 U.S.C. § 102(e) as being anticipated by, or alternatively, under 35 U.S.C. § 103(a) as being obvious over, Muramatsu.

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

The claimed invention is directed to a blowby gas circulation system for an engine including a crankcase and intake system, in which gas and liquid are effectively separated from a gas-liquid mixture generated in the crankcase and engine oil is prevented from flowing out to an intake system of the engine (e.g., see specification at page 2, lines 7-10).

The claimed invention provides a blowby gas circulation system in which all of the gas-liquid mixture G1 (all reference numerals herein being used for the Examiner's clarity only and not for limiting the claims) generated in the crankcase 5 is gathered in the upper space 23a of the oil tank 23. After the gas-liquid mixture G1 is subjected to the first gas-liquid separation, the gas-liquid mixture G2 is introduced to the breather chambers 30 and 32. That is, since the gas-liquid mixture G2 which has experienced the gas-liquid separation to some extent is introduced to the breather chambers 30 and 32, the possibility of the amount of gas-liquid mixture G2 exceeding a capacity of separating gas from liquid is reduced (or eliminated). As a result, since the gas-liquid separation is effectively performed in the breather chambers 30 and 32, engine oil can be prevented

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from running out to the intake system (e.g., see specification at page 7, lines 24-25, and page 8, lines 1-11).

Moreover, since the pumping power of the second oil pump 26 is established to a larger value than that of the first oil pump 21, the inside of the crankcase 5 is kept in a vacuum condition with respect to the first breather chamber 30, thereby the engine oil O1 and O2 separated in the breather chambers 30, 32 are smoothly sucked into the crankcase 5 (e.g., see specification at page 8, lines 12-17). Further, because the first and second breather chambers 30, 32 are integrally formed with the crankcase 5, the number of components of the blowby gas circulation system can be reduced (e.g., see specification at page 8, lines 18-21).

In an illustrative, non-limiting aspect of the invention, as defined for example by independent claim 1, a blowby gas circulation system for an engine including a crankcase and an intake system. The blowby gas circulation system includes an oil tank for supplying engine oil reserved therein to the crankcase, for receiving a gas-liquid mixture generated in the crankcase, and for separating the gas-liquid mixture into a processed gas-liquid mixture and engine oil. The blowby circulation system further includes a breather chamber for receiving the processed gas-liquid mixture, for separating the processed gas-liquid mixture into blowby gas and engine oil, for sending the blowby gas to the intake system, and for returning the engine oil to the crankcase.

Independent claims 2, 6, and 7 define somewhat similar features.

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II. THE PRIOR ART REJECTIONS

Claims 1, 2, 4-7, and 11-26 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Muramatsu (U.S. Patent No. 6,695,658). Claim 8 stands rejected under 35 U.S.C. § 103(a) as being obvious over Muramatsu. Claims 27-30 stand rejected under 35 U.S.C. § 102(e) as being anticipated by, or alternatively, under 35 U.S.C. § 103(a) as being obvious over, Muramatsu.

The Examiner alleges that Muramatsu discloses or suggests all of the features of the claimed invention.

As mentioned above, while Applicants believe that claims 6, 7, 21-26, 29, and 30 are patentable, to speed prosecution, Applicants cancel claims 6, 7, 21-26, 29, and 30 without prejudice or disclaimer, thereby rendering the rejections of these claims moot.

With respect to claims 1, 2, 4, 5, 8, 11-20, 27, and 28, Applicants respectfully traverse this rejection.

A. Independent Claim 1:

For example, independent claim 1 recites, *inter alia*, a blowby gas circulation system for an engine including a crankcase and an intake system, including:

an oil tank for supplying engine oil reserved therein to said crankcase, said oil tank receiving a gas-liquid mixture generated in said crankcase, and said oil tank separating said gas-liquid mixture into a processed gas-liquid mixture and engine oil; and

a breather chamber integrally formed with said crankcase for receiving said processed gas-liquid mixture, said breather chamber separating said processed gas-liquid mixture into blowby gas and engine oil, said breather chamber sending said blowby gas to said intake system, and said breather chamber returning said engine oil to said crankcase (emphasis added).

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That is, the breather chamber according to the claimed invention, as defined for example, by independent claim 1, is integrally formed with the crankcase. As mentioned above, according to the exemplary aspects of the present invention, the first and second breather chambers 30, 32 can be integrally formed with the crankcase 5. Thus, the number of components of the blowby gas circulation system can be reduced (e.g., see specification at page 8, lines 18-21).

In comparison, Muramatsu relates to a small watercraft engine having a lubrication system including a lubrication oil reservoir. In an upper portion of the reservoir, a breather assembly is mounted which aids in separating liquids from vapor traveling therethrough (e.g., see Muramatsu at Abstract).

Particularly, Muramatsu discloses a reservoir portion 14 having a breather chamber 24. From the breather chamber 24, vapors travel through the recovery conduit 28 to a second breather chamber 29. The second breather chamber 29 includes a drain which allows the liquid lubricant L to return to the indication system of the engine for combustion within the engine (e.g., see Muramatsu at column 1, lines 61-65 and column 2, lines 9-27).

Thus, contrary to the claimed invention, in Muramatsu, the breather assembly is mounted in an upper portion of the reservoir.

Therefore, Muramatsu clearly does not disclose or suggest “*a breather chamber integrally formed with said crankcase for receiving said processed gas-liquid mixture*” as recited in independent claim 1.

Thus, Applicants submit that independent claim 1 is not anticipated by, or rendered obvious from, Muramatsu.

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B. Independent Claim 2:

On the other hand, independent claim 2 recites, *inter alia*, a blowby gas circulation system for an engine including a crankcase and an intake system, including:

an oil tank for supplying engine oil reserved therein to said crankcase, said oil tank receiving a first gas-liquid mixture generated in said crankcase, and said oil tank separating said first gas-liquid mixture into a second gas-liquid mixture and engine oil;

a first breather chamber for receiving said second gas-liquid mixture, said first breather chamber separating said second gas-liquid mixture into a third gas-liquid mixture and engine oil, said first breather chamber returning said engine oil directly to said crankcase; and

a second breather chamber for receiving said third gas-liquid mixture, said second breather chamber separating said third gas-liquid mixture into blowby gas and engine oil, said second breather chamber sending said blowby gas to said intake system, and said second breather chamber returning said engine oil to said crankcase (emphasis added).

That is, according to the claimed invention, as define for example, by independent claim 2, the first breather chamber returns the engine oil directly to the crankcase, not the reservoir. As mentioned above, according to the exemplary aspects of the claimed invention, the first and second breather chambers 30, 32 are integrally formed with the crankcase 5, thereby reducing the number of components of the blowby gas circulation system (e.g., see specification at page 8, lines 18-21).

In comparison, in Muramatsu, the engine oil form the first breather (e.g., breather chamber 24) is returned to the reservoir (e.g., reservoir portion 14), not the crankcase (e.g., see Muramatsu at Figure 1). Thus, Muramatsu must pump the oil, which is returned to the reservoir, from the reservoir to the crankcase.

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Therefore, Muramatsu clearly does not disclose or suggest "*said first breather chamber returning said engine oil directly to said crankcase*", as recited in independent claim 2 (emphasis added).

Thus, Applicants submit that independent claim 2 is not anticipated by, or rendered obvious from, Muramatsu.

For the foregoing reasons, Applicants submit that claims 1, 2, 4, 5, 8, 11-20, 27, and 28 are not anticipated by, or rendered obvious from, Muramatsu. Therefore, the Examiner is requested to reconsider and withdraw the rejections of these claims and to permit these claims to pass to immediate allowance.

III. NEW CLAIMS

New claims 31 and 32 are added to provide more varied protection for the present invention as described in the original specification and drawings.

Applicants respectfully submit that new claims 31 and 32 are patentable over the cited references for somewhat similar reasons as those set forth above, as well as for the additional recitations recited therein.

Accordingly, the Examiner respectfully is requested to permit claims 31 and 32 to pass to immediate allowance.

IV. FORMAL MATTERS AND CONCLUSION

Applicants note that the Examiner has not yet indicated that the formal drawings filed on July 7, 2003 are accepted and approved. Therefore, Applicants

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respectfully reiterate the request that the Examiner accept and approve the Formal Drawings filed on July 7, 2003.


In view of the foregoing, Applicants submit that claims 1-5, 8-20, 27, 28, 31, and 32, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,


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CERTIFICATE OF TRANSMISSION

I certify that I transmitted via facsimile to (703) 872-9306 the enclosed Amendment under 37 C.F.R. § 1.116 to Examiner Marguerite J. McMahon on May 10, 2005.


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